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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant(s) : **Haupt et al.**  
Appl. No. : **09/090,035**  
Filed : **06/10/1998**  
Title : **Changer Apparatus for Information Discs**  
Art Unit : **2153**  
Examiner : **T. Kupstas**  
Dkt. No. : **PHD 97-074A**

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**SUPPLEMENTAL APPEAL BRIEF**

This Supplemental Appeal Brief, pursuant to the Office Action mailed December 19, 2002, is an appeal from the rejection of the Examiner dated April 8, 2002. The Appeal Brief filed September 10, 2002 is incorporated, in its entirety, herein by reference. The present Supplemental Appeal Brief addresses the rejections of claims in the Office Action mailed December 19, 2002.

**REAL PARTY IN INTEREST**

U. S. Philips Corporation is the real party in interest.

**RELATED APPEALS AND INTERFERENCES**

None.

**STATUS OF CLAIMS**

09/090,035

Claims 1 and 3-20 remain pending. This Brief is in support of an appeal from the rejection of claims 1, 3-12, 19, and 20.

### **STATUS OF AMENDMENTS**

There are no After-Final Amendments which have not been entered.

### **SUMMARY OF INVENTION**

The present invention discloses a disc changer for information discs. The disc changer has a stacking unit for stacking at least two information discs in at least two stacking positions, a read/write unit for reading information stored on the information discs and/or writing information on the information discs in a play position, and an eject position in which an information disc can be removed from the apparatus. See Specification, page 1, lines 19-27; and page 2, lines 12 - 13. The disc changer can be constructed with a smaller overall depth because transport of the information discs, from the eject position into a loading position of the stacking unit, is along a curve-shaped loading path. See Specification, page 1, lines 22-27. The curve-shaped loading path means that the loading path extends non-orthogonally with respect to the front side of the changer apparatus and, consequently, that between the eject position and the loading position the information discs perform a lateral relative movement parallel to the front side of the changer apparatus. Thus, a curve-shaped loading path also includes a linear loading path which extends obliquely with respect to the front side of the changer apparatus.

Regarding transport of the discs, each individual disc is initially brought to the eject position via external means, for example, by hand by a user. This particular disc is then moved into the loading position of the stacking unit along the curve-shaped loading path via transport means. The loading position of the stacking unit is the position into which the individual disc is moved temporarily after transport from the eject position into a stacking position of the stacking unit. See Specification, page 1, lines 28-34.

The play position is located between the eject position and the loading position. This arrangement allows a disc to be transferred directly from the eject position into the play position without first traveling through the stacking unit. As a result, the changer apparatus can also be

used as a single-information-disc playing apparatus, *i.e.*, the stacking unit may be ignored or even eliminated from alternative embodiments of the disc changer.

The play position is offset from an imaginary direct connecting line between the loading position and the eject position, enabling compact construction of the disc changer. This arrangement is noteworthy because usually the play position should be arranged such that the center of the stacking unit is situated outside the perimeter of the disc when the disc is in the play position. For instance, for a disc changer having an essentially square base, a play position, which is offset from a direct connecting line between the eject position and the loading position, enables better space utilization of the available mounting space.

The disc changer also has the play position located on the loading path, thus permitting the same transport means to be used for transport of the disc between the eject position and the loading position, as well as for transport between the eject position and the play position, and transport between the play position and the loading position. Additional transport mechanisms are not needed for disc transfer from the loading path to the play position.

The disc changer further has a first transport mechanism for transporting a disc between the eject position, the play position and the loading position, and a second transport mechanism for transporting the disc into the stacking positions of the stacking unit. The first transport mechanism is adapted to move a disc in the loading plane, while the second transport mechanism is adapted to move a disc in a stacking direction which is oriented orthogonally to the loading plane.

## ISSUES

Whether claims 1, 3-12, 19, and 20 are unpatentable under 35 U.S.C. §103(a) over US 5,864,532 to *Nakamichi et al.* in view of GB 0391424 to *Umesaki*.

## GROUPING OF CLAIMS

Claims 1, 3-12, 19, and 20 do not stand or fall together, because each claim of claims 1, 3-12, 19, and 20 raises a distinct issue regarding whether the rejection was proper. Accordingly, each claim of claims 1, 3-12, 19, and 20 needs to be individually considered to determine

whether the rejection of each claim was proper.

## ARGUMENT

### 1. *Nakamichi et al. in view of Umesaki.*

The art cited in the Office Action does not disclose each and every feature of independent claim 1. Specifically, neither *Nakamichi et al.* nor *Umesaki*, taken alone or in combination, teach or suggest a changer apparatus for information discs comprising: “a stacking unit”; “a read/write unit”; “an eject position”; and “transport means for transporting the information discs from the eject position into a loading position along a curve-shaped loading path, the loading position being a position for loading discs from the loading path of the transport means into the stacking positions of the stacking unit; and in which the play position is along the loading path between the eject position and the loading position.”

It is noted herein that both *Nakamichi et al.*'s and *Umesaki*'s inventions relate to an information disc handling apparatus, capable of ejecting, storing and reading an information disc. However, Appellants provide the following three reasons why the Examiner has not established a *prima facie* case of obviousness in relation to claim 1.

A first reason why the Examiner has not established a *prima facie* case of obviousness in relation to claim 1 is that the Examiner alleges that *Nakamichi et al.* teaches all of the elements of claim 1, except that *Nakamichi et al.* “does not disclose transporting the disc along a curve-shaped loading path.” See paper no. 26, page 3. The Examiner maintains that “*Umesaki* discloses having a curved shape path for transporting the dis[c], see figs. 3, 6, and 7.” See paper no. 26, page 3. Appellants respectfully submit that the so-called “curved shape path” of *Umesaki* is not, in fact, a “curve-shaped loading path” as this term is defined in Appellants' specification.

In Appellants' specification, the “curve-shaped loading path” is **defined** on page 1, lines 22-27 in this way:

“A curve-shaped loading path is to be understood to mean that the loading path extends non-orthogonally with respect to the front side of the changer apparatus and, consequently, that between the eject position and the loading position the information discs perform a **lateral relative movement** parallel to the front side of the changer

apparatus. Thus, a curve-shaped loading path also includes a **linear loading path** which extends obliquely with respect to the front side of the changer apparatus" (emphasis added).

Appellants submit that *Umesaki*, fails to teach or suggest that the disc loading path meet each of the two features, emphasized above, which **define** a "curve-shaped loading path" as recited in Appellants' claim 1.

A disc in *Umesaki* may follow one of three distinct paths. A first path is through the direct insertion opening 10 to the centering ring 1a of the traverse mechanism 1 (*i.e.*, the play position), as shown in Figures 3 and 4. A disc following this path travels directly from the eject position to the play position. The loading or store position is thus completely bypassed. See col. 5, line 20 to col. 6, line 2.

*Fig 5*  
A second path is into the magazine 5, from the eject position at the front exterior of the apparatus, via magazine storing opening 11, and then to the centering ring 1a of the traverse mechanism 1 (*i.e.*, the play position), as shown in Figures 1 and 2. See col. 5, line 20 to col. 6, line 2. A disc following this path travels from the eject position to the play position, via the loading or store position of magazine 5. However, the portion of the movement from the loading position to the play position is not "a lateral relative movement". The term "lateral" means that the disc must move horizontally in approximately the same plane. Appellants' apparatus accomplishes this lateral movement of the disc. *Umesaki* does not. Rather, the disc in *Umesaki* moves both horizontally **as well as** vertically to move from the loading position to the play position. See col. 4, lines 39-56. Therefore, this second path is not "linear". Rather, the second path is discontinuous and nonlinear, since it requires the disc to move in a first direction in a first plane (*i.e.*, horizontally), and then abruptly change direction and proceed in a second direction in a second plane (*i.e.*, vertically) which is orthogonal to the first direction. See, for example, Figures 1 and 2.

The third path is a combination of the first two paths. This third path extends from the direct insertion opening 10 to the centering ring 1a of the traverse mechanism 1 (*i.e.*, the play position), and then to the loading or store position of magazine 5. The reverse of this path

sequence may also be present. In this third path, the disc must again move both horizontally as well as vertically, and again requires that the disc move in three dimensions. Furthermore, the third path is not linear. Rather, the third path is discontinuous and nonlinear, since it requires the disc to move in a first direction, and then to reverse direction and proceed in a second direction which is opposite to the first direction, in order to move from the direct insertion opening 10, via the traverse mechanism 1, to the magazine 5. See, for example, Figures 1 and 2.

A second reason why the Examiner has not established a *prima facie* case of obviousness in relation to claim 1 is that the Examiner further alleges that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the disc holder of *Nakamichi et al.* with a curve-shaped loading path for transporting the disc as allegedly disclosed in *Umesaki*. The Examiner relies on the following rationale to support his theory: "It would have been desirable to reduce the length of the disk player by providing the means for having a curved shape loading path. One of ordinary skill would have been motivated by the teaching of *Umesaki* to have modified the transporting system of *Nakamichi et al.* with the means for providing the curved transportation path as taught by *Umesaki*, thereby having provided means for transporting the dis[c] that would reduce the overall length of a dis[c] drive." (See paper no. 26, page 4).

Appellants contend that the Examiner's rationale indicates use of unacceptable hindsight construction, since neither *Nakamichi et al.* nor *Umesaki* presents any motivation to rearrange their respective components to differently transport an information disc within each mechanism. *Nakamichi et al.* is directed to solving known problems with existing belt-driven disc mechanisms, and discloses transporting a disc with one or more drive belts, and further suggests that fixed guides may replace at least one belt. *Umesaki* discloses transporting a disc with a rotating roller arm. While the cited references do contemplate alternative embodiments, Appellants submit that neither cited reference suggests replacing its preferred transport means with transport means suggested by the other reference, since such alternative embodiments would require completely rearranging the components of the apparatus.

A third reason why the Examiner has not established a *prima facie* case of obviousness in relation to claim 1 is that to alter the disc transport means disclosed in *Nakamichi et al.* with the

disc transport means of *Umesaki* would destroy the teaching of either reference. The disc transport means in *Nakamichi et al.* utilizes an endless timing belt 1002 (Figure 13) in cooperation with a disk guide 1003 to transport a disc in a single horizontal plane. *Umesaki* uses a roller arm 4 (Figure 1) in cooperation with passive 4a and driving 4b rollers (Figure 2) to transport a disc, in both horizontal and vertical directions. Appellants submit that any attempted modification of *Nakamichi et al.* with the teachings of *Umesaki*, as suggested by the Examiner, would necessitate such extensive modifications of either cited reference as to make such modification clearly nonobvious.

In summary, *Nakamichi et al.* and *Umesaki*, taken alone or in combination, do not teach or suggest, *inter alia*, "transport means for transporting the information discs from the eject position into a loading position along a curve-shaped loading path, the loading position being a position for loading discs from the loading path of the transport means into the stacking positions of the stacking unit; and in which the play position is along the loading path between the eject position and the loading position" as recited in claim 1.

In light of any of the preceding three reasons why the Examiner has not established a *prima facie* case of obviousness in relation to claim 1, Appellants maintain that claim 1 is unobvious over *Nakamichi et al.* in view of *Umesaki*, and meets the criteria for allowance. Additionally, Appellants maintain that claims 3-12, which depend from claim 1, meet the criteria for allowance.

Inasmuch as claims 3-12 have patentable features not included in claim 1, Appellants contend that claims 3-12 are in condition for allowance regardless of whether or not claim 1 is in condition for allowance. Appellants note patentable feature of claims 3-12 as follows.

Claim 3 includes the patentable feature of: "wherein the play position is offset from a direct connecting line between the loading position and the eject position." Appellants traverse the Examiner's position that the aforementioned feature is taught in *Nakamichi et al.* Appellants contend that *Nakamichi et al.* discloses an apparatus wherein the play position is not offset from the direct connecting line between the loading position and the eject position, because, the center point of each of these three positions is located along the same direct line, as shown in Figures 14 and 24. As disclosed in *Umesaki*, while the play position is offset from a direct connecting (*i.e.*,

vertical) line between the loading position and the eject position, this offset is the result of the loading position and the eject position being located in two separate planes, rather than in the same plane as in Appellants' invention. Alternatively, Appellants maintain that claim 3 is allowable because claim 3 depends from claim 1 which, as argued *supra*, is allowable.

Claim 4 includes the patentable feature: "wherein the play position is disposed on the loading path." Appellants disagree with the Examiner's stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra*, *Nakamichi et al.* does not teach or suggest this arrangement, since *Nakamichi et al.* does not disclose a play position disposed along a loading path having the claimed curve-shaped feature. Appellants also maintain that claim 4 is allowable because claim 4 depends from claim 1 which, as argued *supra*, is allowable.

Claim 5 includes the patentable feature: "a first transport mechanism for transporting the information discs between the eject position, the play position and the loading position, and a second transport mechanism for transport of the information discs from the loading position into the stacking positions of the stacking unit." Appellants disagree with the Examiner's stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra*, *Nakamichi et al.* does not teach or suggest an obvious variant of an information disc transport mechanism which transports information discs in a curve-shaped loading path. Appellants maintain that claim 5 is also allowable because claim 5 depends from claim 1 which, as argued *supra*, is allowable.

Claim 6 includes the patentable feature: "wherein the first transport mechanism includes at least a first and a second guide for the disc edge of the information disc, the first guide includes a groove for supporting the disc moving along the loading path and the first guide is movable in the loading plane, the second guide includes at least one rotationally drivable first transport wheel for driving the disc to move along the loading path." Appellants disagree with the Examiner's stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra*, *Nakamichi et al.* does not teach or suggest an obvious variant of such an information disc guide mechanism which has a first guide that is movable in the loading plane. In *Nakamichi et al.* the disc guide 11, which includes the guide groove 11', is not "movable in the loading plane" as required by claim 6. Rather, the disc guide 11 remains stationary while the disc



travels along its length. Additionally, the transport wheels 7, 15, which the Examiner alleges drive the disc along the loading path, actually do not operate on the disc. Rather, the transport wheels 7, 15 propel the timing belt 14. The timing belt 14 in turn propels the disc. Therefore, Appellants submit that it would not be obvious to one skilled in the art to modify *Nakamichi et al.* so that the disc is transported by the rotation of either of the transport wheels 7, 15, since the disc must move away from either transport wheel 7, 15 to travel the straight path found in the cited reference. In contrast, Appellants' mechanism allows a single rotating guide to transport the disc, since the disc may rotate about the rotating guide. This transport of the disc about a rotating guide is possible because of the novel design of the curve-shaped loading path claimed by Appellants. Appellants further maintain that claim 6 is allowable because claim 6 depends from claim 1 which, as argued *supra*, is allowable.

Claim 7 includes the patentable feature: "the first, the second, the third and the fourth guides are pre-loaded towards the curve-shaped loading path". Appellants disagree with the Examiner's stated position that the aforementioned feature is taught or suggested by *Nakamichi et al.* in view of *Umesaki*. As explained *supra*, *Nakamichi et al.* does not teach or suggest an obvious variant of such an information disc guide mechanism which includes a curve-shaped loading path. *Nakamichi et al.* also does not teach or suggest guides which are pre-loaded towards the loading path, regardless of whether or not the loading path is curve-shaped. *Umesaki* teaches pivoting roller arms, but the roller arm is not pre-loaded towards the loading path. Rather, the roller arm defines the loading path, and is not pre-loaded. Further, Appellants submit that it would not be obvious to attempt to combine the planar, linear loading path of *Nakamichi et al.* with the three-dimensional loading path of *Umesaki*, since these cited references teach away from each other and neither suggests Appellants mechanism. Appellants further maintain that claim 7 is allowable because claim 7 depends from claim 1 which, as argued *supra*, is allowable.

Claim 8 includes the patentable feature: "the first and the third guide are mounted on a common pivot." Appellants disagree with the Examiner's stated position that the aforementioned feature is taught or suggested by *Nakamichi et al.* in view of *Umesaki*. As explained *supra*, *Nakamichi et al.* does not teach or suggest an obvious variant of such an

information disc guide mechanism, since the guides 12, 14 therein do not pivot. *Umesaki* teaches two pivoting guides, namely roller arm 4 and detection guide 12b. However, these two guides do not share a common pivot point. Rather each has its own unique pivot point. Roller arm 4 pivots about pivoting shaft 4c (Figure 5). Detection guide 12b pivots about detection guide shaft 12d (Figure 5). Appellants therefore submit that neither cited reference teaches or suggests the patentable features of claim 8, and thus claim 8 is not obvious in view of the cited references. Appellants additionally maintain that claim 8 is allowable because claim 8 depends from claim 1 which, as argued *supra*, is allowable.

Claim 9 includes the patentable feature: "wherein a read/write unit is movably supported on a chassis plate of the apparatus." Appellants disagree with the Examiner's stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra*, *Nakamichi et al.* does not teach or suggest an obvious variant of such an information disc apparatus wherein the read/write unit is supported on a chassis plate. Rather, *Nakamichi et al.* discloses an optical mechanism 1006 which resides in vertical transport mechanism 1007. Vertical transport mechanism 1007 is in turn mounted in sliding plate 75 of damper lock mechanism 1008. Damper lock mechanism 1008 is then mounted on chassis 90. Appellants note that the optical mechanism 1006 is not mounted on the chassis 90, but is instead isolated from the chassis 90 via several intermediate structures, such as, *inter alia*, the sliding plate 75 and the damper lock mechanism 1008. See col. 13, line 61 to col. 14, line 15; and Figures 9 and 10. Appellants submit that it would not have been obvious to operationally mount the optical mechanism 1006 directly on chassis 90. Appellants therefore submit that neither cited reference teaches or suggests the patentable features of claim 9, and thus claim 9 is not obvious in view of the cited references. Appellants further maintain that claim 9 is allowable because claim 9 depends from claim 1 which, as argued *supra*, is allowable.

Claim 10 includes the patentable feature: "wherein the read/write unit includes a base plate and a laser mounting plate, the base plate and the laser mounting plate are coupled by means of dampers". Appellants disagree with the Examiner's stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra*, *Nakamichi et al.* does not teach or suggest an obvious variant of such an information disc apparatus wherein the

base plate and the laser mounting plate are coupled by means of dampers. Rather, the optical pickup 2 is mounted directly on chassis 30. Then, this combined structure is mounted on base 40 via fasteners 43, first dampers 44, second dampers 41, and springs 42 as shown in Figure 9. Appellants respectfully submit that this construction, taken alone or in combination with *Umesaki*, does not teach or suggest Appellants' apparatus as recited in claim 10. Specifically, Appellants' apparatus includes laser unit 39 and associated laser mounting plate 35 which are coupled to base plate 31 via first, second and third dampers 32, 33, 34, respectively. See specification, page 10, lines 2-3; and Figures 2 and 3. Appellants submit that the construction of Figures 2 and 3 provides an unexpected amount of vibration dampening due to the increased size of the dampers used, and the position of the dampers adjacent the laser unit rather than adjacent the chassis. Appellants therefore submit that neither cited reference teaches or suggests the patentable features of claim 10, and thus claim 10 is not obvious in view of the cited references. Appellants further maintain that claim 10 is allowable because claim 10 depends from claim 1 which, as argued *supra*, is allowable.

Claim 11 includes the patentable feature: "wherein the read/write unit is movable into the play position in the vertical direction." Appellants disagree with the Examiner's stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra*, *Nakamichi et al.* does not teach or suggest an obvious variant of such a read/write unit. Appellants further maintain that claim 11 is allowable because claim 11 depends from claim 1 which, as argued *supra*, is allowable.

Claim 12 includes the patentable feature: "wherein in the play position the first, second, third and fourth guides are pivoted away from the disc edge of the information disc, and the pivoting away of the guides is controlled by the base plate of the read/write unit or a sliding plate." Appellants traverse the Examiner's position that the aforementioned feature is taught or suggested by *Nakamichi et al.* in view of *Umesaki*. Neither *Nakamichi et al.* nor *Umesaki*, taken alone or in combination, teach or suggest a mechanism wherein "the pivoting away of the guides is controlled by the base plate of the read/write unit or a sliding plate." Appellants' apparatus includes this feature as illustrated in, for example, Figure 5. In Figure 5 guide pins 31a, 31b, 31c, 41a interact with sliders 44, 45, 46 and guideways 40, 41, respectively, in order to urge the

pivoting away of the guides. See, for example, the specification at page 11, line 33 to page 12, line 5, which state the following (referring to Figure 10): "The pivoting away of the first guide 20, the second guide 21, the third guide 22 and the fourth guide 23 is controlled by the movement of the sliding plate 43, which performs a movement in the y direction between the second intermediate position and the play position. During this movement between the second intermediate position and the play position the sliding plate 43 urges the first guide 20, the second guide 21, the third guide 22 and the fourth guide 23 away from the information disc 1 against the pre-loading forces."

In contrast, neither *Nakamichi et al.* nor *Umesaki*, taken alone or in combination, teach or suggest such an arrangement. For example, in *Umesaki*, guides 17 remain stationary while a lever 16 is used to move the traverse mechanism 1 vertically, which allows a disc to be inserted. See *Umesaki*, specification, col. 8, lines 23-58; and Figures 10 and 11. Similarly, *Nakamichi et al.* teaches drive-side disc guide 1002 (Figure 3) and fixed disc guide 1003 (Figure 4). Again, neither of these disc guides pivots. Rather, each of these disc guides is slidably mounted on chassis 80, and slides transversely away from the centerline of the disc apparatus when a disc is inserted into the apparatus. See col. 6, lines 50-65. Appellants therefore submit that neither cited reference teaches or suggests the patentable features of claim 12, and thus claim 12 is not obvious in view of the cited references.

Appellants further contend that it would be necessary to destroy the teachings of *Nakamichi et al.* in order to combine the transversely sliding disc mechanism of *Nakamichi et al.* with the stationary guides of *Umesaki*, particularly since *Nakamichi et al.*'s disc mechanism must expand and compress transversely to accept discs of different diameters.

Appellants also note that in *Umesaki*, the movement or pivoting of the guides occurs while the information disc is in the eject or access position. However, in Appellants' apparatus the guides are pivoted when the information disc is in the play position, so the guides are prevented from interfering with the reading of the information disc. Again, arranging the guides so they do not interfere with the disc reading position is not taught or suggested by *Nakamichi et al.* or *Umesaki*, alone or in combination.

Claim 19 includes the patentable feature: "the overall depth of the apparatus is less than

or equal to approximately 1.5 times the information disc diameter.” Appellants disagree with the Examiner’s stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra*, *Nakamichi et al.* and *Umesaki* do not teach or suggest an obvious variant of such a disc changer apparatus. The disc handling apparatus of each cited reference is designed to accommodate discs having different diameters. Since the disc diameter is not constant, the overall depth of the apparatus can not be dependent upon the disc diameter. Appellants therefore submit that neither cited reference teaches or suggests the patentable features of claim 19, and thus claim 19 is not obvious in view of the cited references. Appellants further maintain that claim 19 is allowable because claim 19 depends from claim 1 which, as argued *supra*, is allowable.

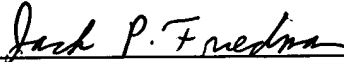
In light of the preceding arguments, Appellants maintain that claims 3-12 and 19 are in condition for allowance regardless of whether claim 1 is in condition for allowance.

Claim 20 includes the patentable feature of: “the discs can be immediately transported from the eject position to the play position without going through the loading position.” Appellants disagree with the Examiner’s stated position that the aforementioned feature is disclosed in *Nakamichi et al.* As explained *supra* with respect to claim 1, *Nakamichi et al.* does not teach or suggest an obvious variant of an apparatus having this patentable feature. Additionally, since the Examiner presented arguments as being applicable to both claim 1 and claim 20, it therefore follows that Appellants’ arguments presented *supra* for claim 1 also apply to claim 20.

### **Conclusion**

In summary, based on the preceding arguments, Appellants respectfully believe that claims 1, 3-12, 19, and 20 are unobvious over *Nakamichi et al.* in view of *Umesaki*, and that all claims meet the criteria for allowance. Thus, Appellants respectfully request reversal of the 35 U.S.C. §103(a) rejections of all rejected claims.

Respectfully submitted,

  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant(s) : **Haupt *et al.***  
Appl. No. : **09/090,035**  
Filed : **06/10/1998**  
Title : **Changer Apparatus for Information Discs**  
Art Unit : **2153**  
Examiner : **T. Kupstas**  
Dkt. No. : **PHD 97-074A**

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APPENDIX - CLAIMS ON APPEAL

1 1. A changer apparatus for information discs, comprising:  
2 a stacking unit for stacking at least two information discs in respective stacking positions;  
3 a read/write unit for reading information stored on the information discs and/or writing  
4 information on the information discs in a play position;  
5 an eject position at which an information disc can be removed from the apparatus; and  
6 transport means for transporting the information discs from the eject position into a  
7 loading position along a curve-shaped loading path, the loading position being a position for  
8 loading discs from the loading path of the transport means into the stacking positions of the  
9 stacking unit;  
10 and in which the play position is along the loading path between the eject position and the  
11 loading position.

1 3. The apparatus of Claim 1, wherein the play position is offset from a direct connecting line  
2 between the loading position and the eject position.

1        4.        The apparatus of Claim 1, wherein the play position is disposed on the loading path.

1        5.        The transport means of Claim 1, including a first transport mechanism for transporting  
2        the information discs between the eject position, the play position and the loading position, and a  
3        second transport mechanism for transport of the information discs from the loading position into  
4        the stacking positions of the stacking unit, the first transport mechanism moves the information  
5        discs in the loading plane and the second transport mechanism moves the information discs in a  
6        stacking direction oriented vertically with respect to the loading plane.

1        6.        The apparatus of Claim 5, wherein the first transport mechanism includes at least a first  
2        and a second guide for the disc edge of the information disc, the first guide includes a groove for  
3        supporting the disc moving along the loading path and the first guide is movable in the loading  
4        plane, the second guide includes at least one rotationally drivable first transport wheel for driving  
5        the disc to move along the loading path.

1        7.        The apparatus of Claim 6, wherein:  
2        the first guide is a passive supporting guide;  
3        the first transport mechanism further includes: a third guide for the disc edge and having  
4        a second transport wheel for driving the disc to move along the loading path; and a passive  
5        supporting guide as a fourth guide for the disc edge with a groove for supporting the disc moving  
6        along the loading path;  
7        the first, the second, the third and the fourth guides include one or more pivotal arms  
8        which are supported at one end and which are pivotable in the loading plane;  
9        the first, the second, the third and the fourth guides are pre-loaded towards the curve-  
10       shaped loading path;  
11       the first transport wheel moves the information discs between the eject position and a  
12       transfer position and the second transport wheel moves the information discs from the transfer  
13       position into the loading position.



1 8. The apparatus of Claim 7, wherein the first and the third guide are mounted on a common  
2 pivot.

1 9. The apparatus of Claim 1, wherein a read/write unit is movably supported on a chassis  
2 plate of the apparatus.

1 10. The apparatus of Claim 9, wherein the read/write unit includes a base plate and a laser  
2 mounting plate, the base plate and the laser mounting plate are coupled by means of dampers, the  
3 base plate is slidably mounted on the chassis plate, and the laser mounting plate carries an optical  
4 unit for reading information stored on the information disc and a clamping device for clamping  
5 the information disc in the play position so that the read unit is isolated from vibrations of the  
6 chassis.

1 11. The apparatus of Claim 9, wherein the read/write unit is movable into the play position in  
2 the vertical direction.

1 12. The apparatus of Claim 9, wherein in the play position the first, second, third and fourth  
2 guides are pivoted away from the disc edge of the information disc, and the pivoting away of the  
3 guides is controlled by the base plate of the read/write unit or a sliding plate.

1 13. The apparatus of Claim 1, wherein  
2 the stacking unit comprises at least two holder compartments for holding one information  
3 disc each;  
4 the holder compartments are coupled to at least one threaded spindle and are movable  
5 into a vertical direction by rotation of the spindles;  
6 there is provided an upper stacking zone and a lower stacking zone in the stacking unit  
7 for stacking the holder compartments;  
8 the loading position is in a central zone between the upper and the lower stacking zone;  
9 one of the holder compartments is each time movable into the loading position by rotation

10 of the spindles, and the transport means move the information disc from the holder  
11 compartment, which is in the loading position, into the play position and into the eject position.

1 14. The apparatus of Claim 13, wherein in the axial direction of the spindles the central zone  
2 has spacing zones at both sides of the loading position, which spacing zones define an axial  
3 spacing between the holder compartment in its loading position and the axially adjacent holder  
4 compartments in their stacking positions.

1 15. The apparatus of Claim 13, wherein the average screw thread pitch of the spindles in the  
2 loading position is smaller than the average screw thread pitch in the upper and the lower  
3 stacking zone.

1 16. The apparatus of Claim 13, wherein the screw thread pitch of the spindles in the loading  
2 position is essentially zero.

1 17. The apparatus of Claim 13, wherein the average screw thread pitch in the spacing zones is  
2 greater than the average screw thread pitch in the upper and the lower stacking zone.

1 18. The apparatus of Claim 13, wherein there is provided a lower and an upper guide pin for  
2 guiding the information discs into the holder compartments of the stacking unit, which guide pins  
3 are engageable into the center holes of the information discs from above and from below,  
4 respectively.

1 19. The apparatus of claim 1 in which the overall depth of the apparatus is less than or equal  
2 to approximately 1.5 times the information disc diameter.

1 20. A changer apparatus for information discs, comprising:  
2 a stacking unit for stacking at least two information discs in different respective stacking  
3 positions;

4 a read/write unit for reading information stored on the information discs and/or writing  
5 information on the information discs in a play position;

6 an eject position at which an information disc can be inserted and removed from the  
7 apparatus; and

8 transport means for transporting the information discs from the eject position into a  
9 loading position along a curve-shaped loading path, the loading position being a position for  
10 loading discs from the loading path of the transport means into the stacking positions of the  
11 stacking unit;

12 and in which the discs can be immediately transported from the eject position to the play  
13 position without going through the loading position.